

COURSE OUTLINE

(1) GENERAL

SCHOOL	UNIVERSITY OF THESSALY		
ACADEMIC UNIT	DEPARTMENT OF CIVIL ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	AO0801	SEMESTER	9th
COURSE TITLE	COMPOSITE STRUCTURES		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
		4	6
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialized general knowledge, skills development</i>	Specialized general knowledge		
PREREQUISITE COURSES:	Solid Mechanics, Statics I, Strength of Materials I & II, Reinforced Concrete Design I & II, Steel Structures I & II		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS			
COURSE WEBSITE (URL)	https://eclass.uth.gr/courses/CULT_U_272/		

(2) LEARNING OUTCOMES

Learning outcomes <i>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.</i> <i>Consult Appendix A</i> • <i>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</i> • <i>Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</i> • <i>Guidelines for writing Learning Outcomes</i>
The course aims to present the main principles and fundamental concepts for the behavior and design of composite key elements and structures, with emphasis on steel-concrete (reinforced) ones. The main learning outcomes of the course are to provide an in-depth understanding of the behavior of steel-concrete composite structures and the ability to analyze and design them efficiently, becoming also familiar with the application of the related European structural design codes (Eurocodes).

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management
Adapting to new situations	Respect for difference and multiculturalism
Decision-making	Respect for the natural environment
Working independently	Showing social, professional and ethical responsibility and sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive
Working in an interdisciplinary environment	
Production of new research ideas	Others...

The course aims at offering the following general competences:

- Search for, analysis and synthesis of data
- Decision-making
- Working independently
- Engineering judgment
- Production of inductive reasoning
- Showing professional and ethical responsibility
- Criticism and self-criticism

(3) SYLLABUS

1	Introduction, symbols
2	Materials (basic mechanical principles & constitutive laws)
3	Basic design principles
4	Structural analysis
5	Design of composite beams at ultimate limit state (ULS)
6	Design of composite slabs at ULS
7	Shear connection (full and partial)
8	Design of composite columns at ULS
9	Design of composite columns in compression
10	Composite joints
11	Serviceability limit state (cracking, deflections, stresses)
12	Introduction to seismic design of composite structures
13	Introduction to timber-concrete composite structures

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	Use of ICT in teaching, communication with students via email, use of online classroom system (eclass)	
TEACHING METHODS <i>The manner and methods of teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic</i>	<i>Activity</i>	<i>Semester workload</i>
	Lectures	52 hours
	Study of course material	30 hours
	Homework exercises	60 hours
	Exam preparation	15 hours
	Final exam	3 hours
	Course total	160 hours

<i>creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non- directed study according to the principles of the ECTS</i>		
STUDENT PERFORMANCE EVALUATION Description of the evaluation procedure <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open- ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	Language of Evaluation: Greek Course evaluation: (a) 40% written assignment (homework exercises) (b) 60% written examination at the end of the semester The evaluation aims at examining both the knowledge and judgment of students. The procedure evaluates the candidate's ability to solve a series of problems that cover all the fundamental sections of the course and require (a) in-depth understanding of the theory and (b) dedicated preparation through the completion of exercise booklets throughout the semester. The evaluation criteria are explained in class at the beginning of the semester.	

(5) ATTACHED BIBLIOGRAPHY

-Suggested bibliography:

1. I. Vayas, *Composite Structures*, 4th edition, Kleidarithmos, 2018 (in Greek)
2. I. Vayas, I. Palamas. K. Tatsis, P. Thanopoulos, *Composite Structures Design Guide*, Kleidarithmos, 2009 (in Greek)
3. A. Triantafillou, *Composite Structures*, Gotsis, 2016 (in Greek)
4. H. Bode, *European Composite Structures*, 2nd edition, Giurdas, 2005 (in Greek)
5. Eurocode 2: Part 1-1 (EN1992-1-1)
6. Eurocode 3: Part 1-1 (EN1992-1-1)
7. Eurocode 3: Part 1-3 (EN1993-1-3)
8. Eurocode 4: Part 1-1 (EN1994-1-1)
9. Eurocode 8: Part 1 (EN 1998-1)

- Related academic journals: